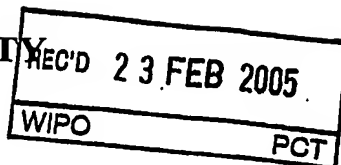


PATENT COOPERATION TREATY

PCT



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference OPP021546KR	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/KR 2003/001083	International filing date (day/month/year) 2 June 2003 (02.06.2003)	Priority Date (day/month/year) 13 December 2002 (13.12.2002)
International Patent Classification (IPC) or national classification and IPC IPC⁷: H04B 7/06, H04L 27/26, H04Q 7/38		
Applicant ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE		

1. This international preliminary examination report has been prepared by this International Preliminary Examination Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I. ☒ Basis of the opinion
- II. ☐ Priority
- III. ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV. ☐ Lack of unity of invention
- V. ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI. ☐ Certain documents cited
- VII. ☒ Certain defects in the international application
- VIII. ☒ Certain observations on the international application

Date of submission of the demand 18.09.2003	Date of completion of this report 9 February 2005 (09.02.2005)
Name and mailing address of the IPEA/AT Austrian Patent Office Dresdner Straße 87 A-1200 Vienna Facsimile No. 1/53424/200	Authorized officer LOIBNER K. Telephone No. 1/53424/323

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR 2003/001083

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____.

☐ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement) under Article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____.

☐ the drawings:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____.

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____.

☐ the claims, Nos. _____.

☐ the drawings, sheets/fig _____.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as „originally filed“ and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

I. Statement

Novelty (N)

Claims 1-16

YES

Claims ----

NO

Inventive step (IS)

Claims 1-16

YES

Claims ----

NO

Industrial applicability (IA)

Claims 1-16

YES

Claims ----

NO

Citations and explanations (Rule 70.7)

The following documents have been cited in the Search Report:

D1: EP 0 938 208 A1

D2: US 2001/0004604 A1

D3: US 2001/0055287 A1

Document D1, which is considered to represent the closest prior art, discloses a transmission method and a transmission apparatus for transmitting signals on the basis of a OFDM/TDMA-system, wherein a plurality of sub-carriers being orthogonal to each other are allocated to a variable number of channels, whereby each channel contains a variable number of sub-carriers depending on information being transmitted in said signals and a pilot symbol is allocated to every n-th sub-carrier. According to the teaching of D1 it is recommended to optimize the number of added pilot symbols in accordance with the variation of the channel attenuation. More precisely, if the velocity of the mobile station is comparatively slow the said channel attenuation is a generally flat curve. If, however, the velocity of the mobile station increases, the characteristics of the channel will change because of the movements of the mobile station.

Therefore, document D1 suggests adapting the number of pilot symbols added in the transmitted signal in accordance with the velocity of the mobile station.

The invention according to document D2 is drawn to a radio communication system wherein the mobile stations are grouped according to the sensed speed of the mobile stations which is reported back to the radio base station of said communication system and wherein a different radio channel is assigned for each set group.

Document D3 is drawn to an OFDM system wherein the number of sub-carriers is decreased in accordance with increase of the moving speed of the mobile station to avoid deterioration in communication quality due to increasing moving speed. In another

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Box V (page 1)

embodiment it is suggested to adapt the modulation and coding scheme according to the measured moving speed of the mobile station.

Each of the cited documents D1 to D3 addresses the subject matter of present independent claims 1, 10, 13, 15 and 16 inasmuch as several features are disclosed by them, however, the cited documents do neither disclose nor suggest the common special technical feature linking the independent claims in the various category of determining and assigning additional pilot symbols in accordance with the moving speed and the traffic requirement.

The subject-matter of independent claims 1, 10, 13, 15 and 16 is therefore considered to be new and to involve an inventive step as well.

The additional features introduced in dependent claims 2-9, 11-12 and 14 defining further preferred embodiments are new and inventive by virtue of dependency.

Industrial applicability is given.

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VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

In order to meet the requirements of Rule 6.3 (b) PCT, whenever appropriate, each independent claim should have been clearly delimited in relation to the closest prior art (for example D1) using the two-part form.

In order to meet the requirements of Rule 5.1 (a)(ii) PCT, documents D1 to D3, which disclose prior art that is relevant to the present invention, should have been cited in the description and the said relevant prior art should have been briefly outlined.

Reference signs in parentheses should have been inserted in the claims to increase their intelligibility. This applies to both the preamble and the characterizing portion (see Rule 6.2 (b) PCT).

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VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The various definitions of the invention given in independent claims 1, 10, 13, 15 and 16 are such that the claims as a whole are not clear and concise, contrary to Article 6 PCT. The claims should have been recast to include only the minimum necessary number of independent claims in any one category (Rule 6.4(a)-(c) PCT).

In the present case it is considered appropriate to use only one independent claim in any category.

When considering the detailed description of the preferred embodiments the term "traffic requirement" used in independent claims 1, 13 and 15 has effectively the same meaning as the term "traffic volume" which has been used in independent claims 10 and 16. Therefore, the claims should have been amended accordingly in order to make the intended scope of said dependent claims more visible.